File: NPDES, Mgt Co, Kennecott-Humboldt Mill

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August 9, 2010

Mr. Steve Casey, P.E.
Upper Peninsula District Supervisor
Michigan Department of Natural Resources and Environment
Water Bureau
K.I. Sawyer International Airport and Business Center
420 Fifth Street
Gwinn, Michigan 49841

RE: KENNECOTT EAGLE MINERALS COMPANY, HUMBOLDT MILL PROPERTY (NPDES PERMIT #MI0058649): STORM WATER MONITORING PLAN

Dear Mr. Casey:

Pursuant to Part I, Section A, Paragraph 3.c. of the above referenced National Pollutant Discharge Elimination System ("NPDES") permit, enclosed with this letter is a Storm Water Monitoring Plan for the Kennecott Eagle Minerals Company, Humboldt Mill property at 4547 County Road 601 in Champion, Michigan.

If you need additional information or have questions regarding anything presented here, please contact me at (906) 486-1257.

Sincerely,

Kristen Mariuzza
Environmental & Permitting Manager

cc: Joe Maki, MDNRE
Alicia Duex, KEMC

enclosure

STORM WATER MONITORING PLAN

for the

Humboldt Mill Property
4547 County Road 601
Champion, Michigan

Prepared for:

Kennecott Eagle Minerals Company
504 Spruce Street
Ishpeming, Michigan 49849

Prepared by:

Horizon Environmental Corporation
4771 – 50th Street, SE, Suite One
Grand Rapids, Michigan 49512

August 2010

HORIZON ENVIRONMENTAL

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TABLES

1.0 PURPOSE

The purpose of this Storm Water Monitoring Plan ("Plan") is to present a plan for determination of the quality of storm water being discharged from the Kennecott Eagle Minerals Company ("KEMC") Humboldt Mill located at 4547 County Road 601, in Champion, Michigan. This Plan has been prepared as a condition of the Humboldt Mill's National Pollutant Discharge Elimination System ("NPDES") Permit (Permit No. MI0058649) which authorizes process wastewater and storm water discharge from the Humboldt Mill property to a wetland contiguous to the Middle Branch of the Escanaba River.

2.0 BACKGROUND

2.1 PROPERTY LOCATION AND OWNERSHIP

The Humboldt Mill property is located in Sections 2 and 11 in Township 47 North, Range 29 West, Humboldt Township, Marquette County, Michigan. A site location map is presented as Figure 1. The Humboldt Mill property is presently owned by three separate entities. Kennecott Eagle Land, LLC ("KEL"), an affiliated company of KEMC, owns approximately 27 acres of the site, including the buildings associated with the former Humboldt Mill. Callahan Mining Corporation ("Callahan") owns the adjacent HTDF and surrounding lands (approximately 188 acres), and O'Dovero Properties owns the remainder of the property where mill operations are planned.

2.2 PROPERTY HISTORY

The Humboldt Mill facility was originally constructed in 1954 to concentrate low grade iron ore from the adjacent Humboldt Mine (now referred to as the HTDF). The Humboldt Mill facility incorporated crushing, grinding, and flotation process unit operations to concentrate iron ore. The mill was operated to process iron ore until approximately 1970. At that time the Humboldt Mine was closed and the mill was converted to a hematite concentrate regrind with upgrading circuits using two ball mills and an elutriation process. An associated pellet facility continued to operate until approximately 1979, processing hematite concentrate and excess concentrate from the nearby Republic Mine.

In the early 1980's, Callahan developed the Ropes Gold Mine approximately 10 miles east of the Humboldt Mill site. Callahan purchased parts of the Humboldt Mill facility, with the exception of the pelletizing process. The mill was converted to facilitate gold ore processing and restarted in July 1985, processing ore at a rate of up to 2,000 tons per day. The mill operated until 1989, when the Ropes Mine was closed. During the processing of the Ropes ore, tailings derived from ore processing containing sulfide minerals were placed in the HTDF (the previously mined pit area).

Minerals Processing Corporation ("MPC") purchased the Humboldt Mill from Callahan in the mid 1990's to provide custom milling services under contract from producers. MPC intermittently operated some sections of the mill for custom grind contracts.

2.3 ANTICIPATED PROPERTY REDEVELOPMENT

KEL purchased the mill buildings and associated property in September 2008. KEMC proposes to use the Humboldt Mill property, as well as the adjacent Callahan and O'Dovero properties, to accomplish beneficiation of base metal ores mined off-site. Copper and nickel concentrates produced at the property will be transported from the site to another location for further processing (i.e., smelting). Tailings derived from the beneficiation operation will be managed through discharge to the HTDF for subaqueous disposal.

2.4 ENVIRONMENTAL CONDITIONS AND PERMIT REQUIREMENTS

As a result of historical operations on the property, the property is a "facility" as defined under Part 201 of Michigan's Natural Resource and Environmental Protection Act ("NREPA" or 1994 Michigan P.A. 451, as amended). Residuals from historic mill operations are present on the ground surface at the site and are expected to contact storm water, which is discharged from the mill areas via storm water drainage ditches.

Part I.A.3 of KEMC's NPDES permit requires preparation of this Storm Water Monitoring Plan for activities or areas (including Sites of Environmental Contamination) which may impact storm water and for which the Michigan Department of Natural Resources and Environment (MDNRE or "Department") determines monitoring is required. Specifically, the NPDES permit states:

> *(c)(1) "Within six (6) months after the effective date of this permit the permittee shall submit to the department a SWMP. Guidance for the SWMP is available on the Internet at.... The SWMP shall be consistent with the attachments to the letter dated May 29, 2009, to the Department regarding the overall Part 632 surface water monitoring plan. The SWMP shall include a proposed list of pollutants to be monitored to adequately characterize the discharge. At a minimum, the proposed list of pollutants shall include significant materials the permittee knows or has reason to believe are present in areas which require storm water monitoring ...."*
>
> *(c)(3) ".... Samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inch of rainfall, causes a discharge, and is at least 72 hours from the previous measurable (i.e., greater than 0.1 inch) storm event. Qualitative data shall be reported for a grab sample taken during the first thirty minutes of the discharge. Additional samples shall be collected during a discharge event, as necessary to be representative of the pollutants discharged form the site. Date and duration of the storm event, the rainfall measurement or estimate, duration between storm event sampled and the end date of the previous measurable storm event, pollutant concentration(s), visual observations, and estimated total volume of the discharge shall be reported."*

As noted, this Plan has been prepared to be consistent with the overall conditions of KEMC's Non-Ferrous Metallic Mineral Mining Permit for the Humboldt Mill property (MDNRE Permit No. MP 01 2010, referred to as the "Part 632 Permit") and the associated Mining Permit

Application ("MPA"). Specifically, the monitoring activities outlined here are intended to be consistent with the conditions of surface water monitoring to be completed pursuant to the Part 632 Permit and as described in the MPA and related May 29, 2009 correspondence from KEMC to the MDNRE. These conditions include storm water sampling methods, sampling locations, sampling frequency, and analytical methods for samples. To address both storm water and surface water monitoring requirements applicable to the Humboldt Mill, KEMC will combine the storm water monitoring requirements of the NPDES permit (Part I.A.3), as outlined in this Plan, with the surface water monitoring requirements under the Part 632 permit to create one comprehensive storm water and surface water monitoring plan.

3.0 SCOPE OF STORM WATER MONITORING

Storm water sampling to be completed at the site will consist of collection of samples at specified outfalls on an established frequency, and analysis of these samples for constituents that are known to be present or could reasonably be present in the drainage areas. The storm water sample locations are illustrated on Figure 2, and the sampling parameters are summarized on Table 1.

3.1 SAMPLE LOCATIONS

As communicated in KEMC's above-referenced May 29, 2009 correspondence, storm water samples will be collected from the outfalls of three storm water culverts that currently discharge, or will discharge, storm water from the mill property. Samples will also be collected from the outfall from the HTDF (sampling location HMP-009, designated Outfall 001 in the NPDES Permit). The sample locations (illustrated on Figure 2) are as follows:

- HMWQ-001 (Under County Road 601 near railroad grade);
- HMWQ-004 (Under County Road 601 at mill entrance);
- HMWQ-005 (South of former pellet plant location); and
- HMP-009 (HTDF outfall; Outfall 001).

To the extent that the outfalls outlined above have not yet been constructed, storm water samples will be collected from existing storm water conveyances at locations proximate to the proposed outfalls, until such time as outfall construction has been completed.

3.2 SAMPLE FREQUENCY

Samples will be collected on a quarterly basis during periods of storm water runoff as specified in the Humboldt Mill NPDES Permit. Table 1 includes the quarterly monitoring parameter list and the more extensive annual monitoring parameter list. Specifically, samples will be collected quarterly during a storm event that results in greater than 0.1 inch of rainfall, causes a discharge, and is at least 72 hours from the previous measurable (i.e., greater than 0.1 inch) storm event. Parameters indicated in Table 1 to be assessed using field methods will be assessed using grab samples collected during the first thirty minutes of the discharge.

As communicated in the May 29, 2009 MPA letter, samples of storm water derived from spring snow melt will be collected for annual analysis for volatile organic compounds ("VOCs"), polynuclear aromatic hydrocarbons ("PAHs"), and cyanide. These annual samples will be collected from locations near the mill (including HMWQ-001, HMWQ-004 and HMWQ-005), and are anticipated to be part of the second quarter storm water monitoring event.

3.3 SAMPLE COLLECTION

KEMC personnel or their designee will monitor weather conditions for appropriate sampling opportunities and determine timing of the sampling events. When weather conditions are favorable for an acceptable rain event (i.e., at least 72 hours of dry weather preceding a rain event predicted to exceed 0.1 inches of accumulation), the sampling staff will be on "stand-by" in anticipation of a sampling event. The sampling staff will document that weather conditions meet the established criteria.

As specified in Part I.A.3 of the NPDES permit, grab samples will be collected within the first thirty minutes of the initial discharge from the storm water conveyance (and not thirty minutes from the start of the rain event). Samples will be collected in appropriate sample containers required by the EPA analytical methods specified in Table 1 (e.g., no-head space vials for VOCs), placed in a sample cooler with ice, and transported to the laboratory under proper chain-of-custody procedures. Additional samples may be collected at different intervals during a rain event to provide a better representation of storm water quality discharged from the site. If KEMC elects to collect additional samples, the results of all samples collected will be reported to the MDNRE.

All relevant conditions associated with a successful sampling event must be recorded and the record included with the storm water monitoring report. Conditions to be recorded include date and duration of the storm event, rainfall measurement or estimate, duration between the storm event sampled and the end date of the previous measurable (i.e., 0.1 inch) storm event, and visual observations.

To reduce the potential for sampling problems due to adverse weather conditions (e.g., freezing), false starts, and intermittent rain events, storm water sampling should not be attempted during freezing conditions or rain events that are not expected to exceed 0.1 inch total accumulation. Storm water sampling should not be attempted during thunderstorms when lighting is present in the area. Sampling equipment should include proper lighting to allow for the safe collection of samples during night conditions.

3.4 SAMPLE ANALYSIS

The storm water samples will be analyzed for the constituents and parameters identified on Table 1 based on a quarterly or annual sample event. Table 1 also specifies the applicable analytical methods and method reporting limits.

4.0 REPORTING

Within sixty (60) days following collection of the quarterly and annual storm water samples, a report of the storm water sampling event will be prepared and submitted to:

District Supervisor, Water Bureau
MDNRE Upper Peninsula District Office
K.I. Sawyer International Airport and Business Center
420 Fifth Street
Gwinn, Michigan 49841

The storm water sample report will include sample collection date, tabulated analytical results, and supporting laboratory data (including entire laboratory report with any notations and data qualifications). The report will include all pertinent information regarding the storm event, including date and duration of the storm event, rainfall measurement or estimate, duration between the storm event sampled and the end of the previous measurable storm event, and visual observations.

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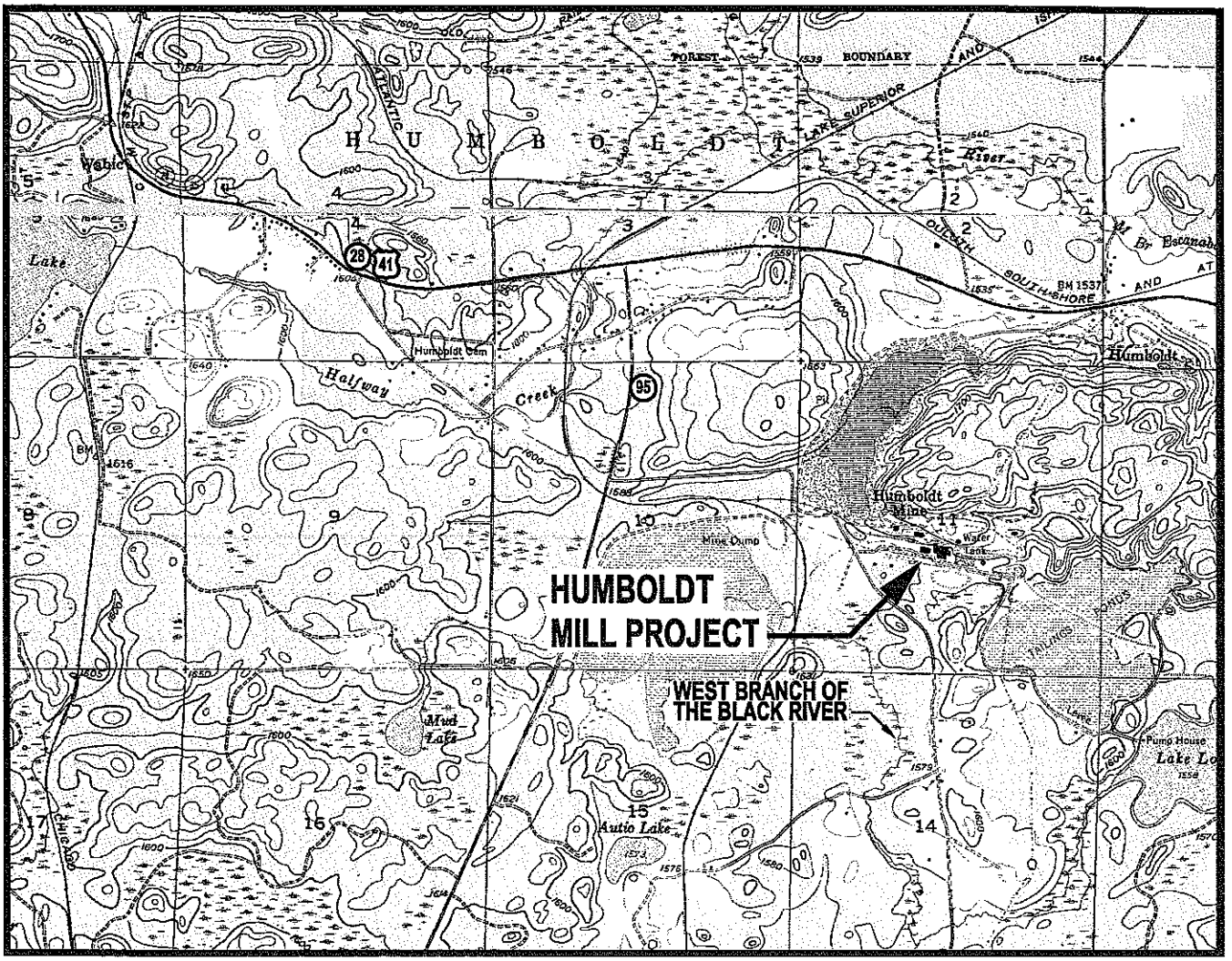

TAKEN FROM 7.5 MINUTE SERIES TOPOGRAPHIC MAP
REPUBLIC AND CHAMPION QUADRANGLES
SCALE: 1" = 3000'

HORIZON ENVIRONMENTAL

PROJECT NUMBER: KEX-0104

Kennecott Eagle Minerals Company
Marquette County, Michigan

FIGURE: 1

SITE LOCATION MAP

AUGUST 2010

Table 1
Kennecott Eagle Minerals Company
Humboldt Mill, Champion, Michigan
Storm Water Monitoring Plan
Analyte / Parameter List

Parameter	Frequency	Analytical Method	Method Reporting Limit	Units
Field				
Temperature	Quarterly	Field	NA	^{0}C
Dissolved oxygen (DO)	Quarterly	Field	NA	mg/L
Specific Conductance	Quarterly	Field	NA	umhos/cm
pH	Quarterly	Field	NA	S.U.
Turbidity	Quarterly	Field	NA	NTU
Flow	Quarterly	Field	NA	cfs
Metals				
Aluminum	Annually	EPA-200.7/6020	50	ug/L
Antimony	Annually	EPA-200.8/6020	2.0	ug/L
Arsenic	Quarterly	EPA-200.8/6020	1.0	ug/L
Barium	Annually	EPA-200.8/6020	10	ug/L
Beryllium	Annually	EPA-200.8/6020	1.0	ug/L
Boron	Annually	EPA-200.8/6020	50	ug/L
Cadmium	Annually	EPA-200.8/6020	0.40	ug/L
Chromium	Annually	EPA-200.8/6020	1.0	ug/L
Cobalt	Annually	EPA-200.8/6020	10	ug/L
Copper	Quarterly	EPA-200.8/6020	2.0	ug/L
Iron	Quarterly	EPA-200.7/6020	40	ug/L
Lead	Quarterly	EPA-200.8/6020	1.0	ug/L
Lithium	Annually	EPA-200.7/6020	10	ug/L
Manganese	Quarterly	EPA-200.8/6020	10	ug/L
Mercury	Quarterly	EPA-1631E	0.25	ng/L
Molybdenum	Annually	EPA-200.8/6020	10	ug/L
Nickel	Quarterly	EPA-200.8/6020	1.2	ug/L
Selenium	Quarterly	EPA-200.8/6020	4.0	ug/L
Silver	Annually	EPA-200.8/6020	0.4	ug/L
Thallium	Annually	EPA-200.8/6020	1.2	ug/L
Vanadium	Annually	EPA-200.8/6020	1.2	ug/L
Zinc	Quarterly	EPA-200.8/6020	10	ug/L
Anions				
Alkalinity, Biocarbonate	Quarterly	310.1/SM 2320 B	2.0	mg/L
Alkalinity, Carbonate	Quarterly	310.1/SM 2320 B	2.0	mg/L
Chloride	Quarterly	325.2/4500-CLE	1.0	mg/L
Fluoride	Quarterly	SM 4500 F-C	0.10	mg/L
Nitrate	Quarterly	353.2/4500 N03F	0.05	mg/L
Nitrite	Quarterly	EPA-353.2 or 354.1/4500 NO2B	0.05	mg/L
Nitrogen, Ammonia	Quarterly	350.1/4500 NH36	0.50	mg/L
Sulfate	Quarterly	EPA-375.4/4038	1.0	mg/L
Sulfide	Quarterly	376.1/4500 S2-F	5.0	mg/L

Table 1
Kennecott Eagle Minerals Company
Humboldt Mill, Champion, Michigan
Storm Water Monitoring Plan
Analyte / Parameter List

Parameter	Frequency	Analytical Method	Method Reporting Limit	Units
Cations				
Calcium	Quarterly	EPA-200.7/6010B	0.50	mg/L
Potassium	Quarterly	EPA-200.7/6010B	0.50	mg/L
Magnesium	Quarterly	EPA-200.7/6010B	0.50	mg/L
Sodium	Quarterly	EPA-200.7/6010B	0.50	mg/L
General Chemistry				
Cyanide	Annually	EPA 335.4	0.02	mg/L
Hardness (Calculated) as CaCO3	Quarterly	EPA-6010/6020	0.002	mg/L
PAH's	Annually	8100	NA	mg/L
Total dissolved solids	Quarterly	EPA-160.1/SM 2540 C	50	mg/L
Total Suspended solids	Quarterly	EPA-160.1/SM 2540 D	1.0	mg/L
Total Organic Carbon	Annually	EPA	2.0	mg/L
Volatile Organic Compound (VOC)	Annually	8260	NA	ug/L